International Journal of Botany
and Research (IJBR)
ISSN (P): 2277-4815; ISSN (E): 2319-4456
Vol. 7, Issue 6, Dec 2017, 1- 4

TRANS STELLAR
•Journal Publications •Research Consultancy

NATURAL EFFECT OF MICRONUTRIENT ON GROWTH AND GROWTH PARAMETER OF SESAME OILSEED CROP

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ABSTRACT

Micronutrient plays a vital role in the growth of any crop. Due to micronutrient content the oil content may varies. Sesame crop is the queen crop of all oil seed Crop. Here the Researchers were conducting their Experiment in the Year 2014 at Dept. Of Plant Physiology, College of Agriculture, OUAT, Bhubaneswar. Micronutrient application to the crop in various critical stages and growth phases yield a concrete result. A technique was developed for the Farmer Friends by the researchers so that they can able to grow oil seed crops properly.

KEYWORDS: Micronutrient Content, Plant Physiology, & Oil Seed Crops Properly

Received: Sep 14, 2017; **Accepted:** Oct 01, 2017; **Published:** Oct 12, 2017; **Paper Id.:** IJBRDEC20171

Original Article

INTRODUCTION

Sesame Crop is an oilseed crop which content rich source of food nutrients having a handsome amount of Oil Content. Micronutrient application may lead to the growth of the nutrient content and oil content of sesame crop. In Odisha condition sesame crop is grown widely as per the demand of Farmers.

Keeping all the above facts into consideration, the present investigation has been undertaken to study the effect of micronutrients applied as foliar spray, on metabolism, growth and yield of sesame crop.

MATERIALSAND METHODS

Here the researchers were followed Randomized Block Design for conducting this research. A concrete field plan and calendar were strictly followed by the Young Scientists under the supervision of Plant Physiologist, Soil Chemist and Agronomist. Critical care was taken time to time and micronutrient application as per the schedule. 10 replications had been made for getting a concrete result

RESULT AND DISCUSSIONS

RGR, NAR, CGR and LAD

- RGR, NAR, CGR and LAD determined between 45 and 60 DAS were depicted in table-7.
- Relative growth rate (RGR) increased with foliar sprays of most of the micronutrients over control, but significant, increase was recorded (101.3 mg/g/day) in combined micronutrients sprayed (T_9) followed by Zn (T_3).
- Net assimilation rate (NAR) significantly influenced by foliar application of micronutrients. The significant increase in NAR over control was observed in case of foliar spray of all the micronutrients

except Mn (T_7) which was at par with control. The highest NAR 1.2 mg/cm^2/day was recorded in T_9 followed by B (T_2) and Zn (T_3).

Table.1: Effect of Different Micronutrients on RGR, NAR, CGR and LAD at Different Growth Period

Treatments	RGR(mg/gm/Day)	NAR(mg/cm^2/Day)	CGR(g/m^2/Day)	LAD
	45-60 DAS	45-60 DAS	45-60 DAS	45-60 DAS
T_1	92.5	0.87	8.7	14.97
T_2	93.2	1.13	15.9	21.49
T_3	95.0	1.05	16.6	24.31
T_4	85.2	0.95	12.9	20.66
T_5	93.5	0.91	10.5	17.37
T_6	91.2	0.96	11.4	17.90
T_7	84.4	0.85	11.4	20.24
T_8	85.5	0.98	11.3	17.36
T_9	101.3	1.20	21.1	27.01
T_{10}	84.4	0.91	12.2	20.36
SE(m)±	**0.763**	**0.001**	**0.760**	**0.596**
C. D(0.5)	**2.26**	**0.002**	**2.58**	**1.77**

Crop growth rate (CGR) was significantly increased by application of different micronutrients as foliar spray. Among the treatments the maximum CGR 21.1 g/m^2/day was registered in plants applied with combined micronutrients (T_9) followed by Zn (T_3), B (T_2) and Mo (T_4). The lowest CGR was recorded in control plant (T_1) where no micronutrient was applied.

Leaf area duration (LAD) was influenced significantly by foliar application of micronutrients. Among the treatments the highest LAD 27.01 was registered in T_9 followed by application of Zn (24.31), B (21.49), and Mo (20.66). The lowest LAD was recorded in control plant without micronutrients (T_1).

Chlorophyll Index and Total Chlorophyll Content

Chlorophyll index and total chlorophyll content of leaf were recorded at 45 and 60 DAS presented in table 8. The data revealed that, the chlorophyll index and total chlorophyll content of leaf were more at 60 than 45 DAS.

The chlorophyll index differed significantly between the control and micronutrient applied plants. The index variable with the lowest value of 8.16 (T_1) to the high value of 13.39 (T_9) at 45 DAS and lowest value of 8.99 (T_1) to the high value of 17.74 (T_9) at 60 DAS among the treatments. Foliar application of all the micronutrients alone or in combination as well as their commercial mixture significantly increased the chlorophyll index over the control except the application of Cu (T_5), which was at par with control. Among the treatments, the highest chlorophyll index was recorded in T_9 followed by Zn (T_3), B (T_2), and Mo (T_4) at both of the growth stages.

Like chlorophyll index similar trend was also observed for the total chlorophyll content of leaf at both 45 and 60 DAS, which varies with the lowest value of 1.27 and 1.61 mg/g fresh wt. In T_1 and highest value of 1.67 and 1.93mg/g fresh wt. In T_9 at 45 and 60 DAS respectively. Almost all the treatments of micronutrients showed significantly greater chlorophyll content over the control except the application of Cu (T_5) which was found at par with control. Among the treatments, T_9 showed the maximum chlorophyll content followed by Zn (T_3), B (T_2) and Mo (T_4) at 45 and 60 DAS.

Table 2: Effect of Different Micronutrients on Chlorophyll Index and Total Chlorophyll Content at Different Growth Stages

Treatments	Chlorophyll Index		Total Chlorophyll Content(mg/g Fresh Weight)	
	45DAS	60 DAS	45DAS	60 DAS
T_1	8.16	8.99	1.27	1.61
T_2	12.91	16.6	1.57	1.90
T_3	13.19	17.2	1.65	1.91
T_4	11.94	14.58	1.56	1.86
T_5	9.54	10.11	1.35	1.69
T_6	10.83	13.11	1.48	1.79
T_7	11.15	13.33	1.49	1.85
T_8	10.22	12.06	1.47	1.76
T_9	13.39	17.74	1.67	1.93
T_{10}	11.16	14.21	1.53	1.85
SE(m)±	**0.653**	**0.548**	**0.047**	**0.003**
C. D(0.5)	**1.93**	**1.62**	**0.14**	**0.009**

CONCLUSIONS

After going through the various micronutrient treatments to sesame crop, it was concluded that foliar application of different micronutrients either alone or their combination enhanced most of the morpho- physiological traits (plant height, number of branches, capsules per plant, RGR, NAR, CGR and total dry matter accumulation per plant) as well as biochemical attributes (chlorophyll content, N, P and K uptake and oil content), seed yield and yield attributes over control. From the experiment a resultant outcome was observed that micronutrient application leads to vegetative and reproductive growth and enhance the oil content. Hence it may be suggested to the farmer stakeholders and researchers that for oil seed crop micronutrient application should be regularly undertaken

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